

A Redescription of "*Trithyreus sawadai*" (Uropygi : Schizomidae) from the Bonin Islands

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Abstract A description of a meagerly known whip-scorpion species, "*Trithyreus sawadai* KISHIDA, 1930", which is now regarded as a species of the genus *Schizomus*, is given for the first time. In spite of insufficient original treatment which was presented only by figures, the specific name has still validity in the Zoological Nomenclature. Originally this animal was found from "the Bonin Islands", but this time it was exclusively discovered from Chichi-jima Island in the same Islands. It may be allied to "*Trithyreus*" *luzonicus* HANSEN known from Luzon in the Philippines, but can be distinguished by the shape of flagellum of both sexes from all the other "*Trithyreus*" hitherto known.

In 1930 KISHIDA reported the occurrence of a whip-scorpion species belonging to a genus "*Trithyreus*" from the Bonin Islands based on one single female specimen. In his report a new specific name was given and figures of the entire body seen from above and lateral sides were shown, but strange enough any description of this animal had not been published by him. In his treatment TAKASHIMA (1948) considered it to be a "nomen nudum". Furthermore the original specimen has been lost, and we have been unable to follow its details for a long time. However, KISHIDA's naming remains valid according to the International Code of Zoological Nomenclature adopted by the XV International Congress of Zoology (articles 12 and 16) if the animal really exists in its world.

In 1972 we had an opportunity to stay on Chichi-jima Island of the Bonins (or the Ogasawara Islands) from March 31 to April 7, and were fortunate enough to rediscover the very species and to collect a plenty of this problematical animal including both sexes. A full description of this

species is thus presented herein.

The Bonin Islands are situated in the Western Pacific approximately between lat. 24° and 28°N. and between long. 141° and 143°E. Chichi-jima Island, situated near lat. 27°N. and long. 142°E., is noted to be rich of its endemic fauna and flora.

We are indebted to Drs. Katsuma DAN and Hideo KASAKI of Tokyo Metropolitan University for their helpful arrangements which made our survey possible. In referring to KISHIDA's paper, we owe to Dr. T. UYEMURA for his valuable aid.

***Schizomus sawadai* (KISHIDA), comb. nov.**

[Japanese name: Sawada-mushi]

Trithyreus sawadai Kishida, 1930, Lansania, Tokyo, 2(12) : 19, 2 figs., "holotype, female". (No description was given.)

Trithyreus sawadai Kishida; Takashima, 1943, Acta Arachnol., 8(1.2) : 20, fig. 4.

Trithyreus sp. Takashima, 1948, Acta Arachnol., 10(3.4) : 103, fig. 4.

Male. Body length (from apex of propeltidium to tip of flagellum), 4.5-5.1 mm. Propeltidial length, 1.22-1.40 mm.

Coloration: Body light brownish grey in general view. Ventral side of cephalothorax and second abdominal sternite whitish brown. Paired brownish spots of muscular impression are presented on the abdomen. Chelicerae and pedipalpi reddish brown. First legs pale reddish brown, the other legs with the same colour as the body sclerites with reddish brown part in the ventro-distal margin of each coxa. Claws and setae reddish brown.

Cephalothorax: Propeltidium shaped saddle-like with a strongly pointed epistome extending antero-medially; in the anterior margin as given in Figs. 1 and 2, the projecting median portion with a pair of setae followed by a single one; a pair of white eye spots well-defined; posterior margin slightly concave in the central part. First thoracic tergite (mesopeltidium) is represented by a pair of narrow triangular plates pointed medially and without spine. Second thoracic tergite (metapeltidium) is separated distinctly into two plates by a well-defined longitudinal narrow strip of membranous skin; plates without spine; postero-lateral margins roundly convex, and

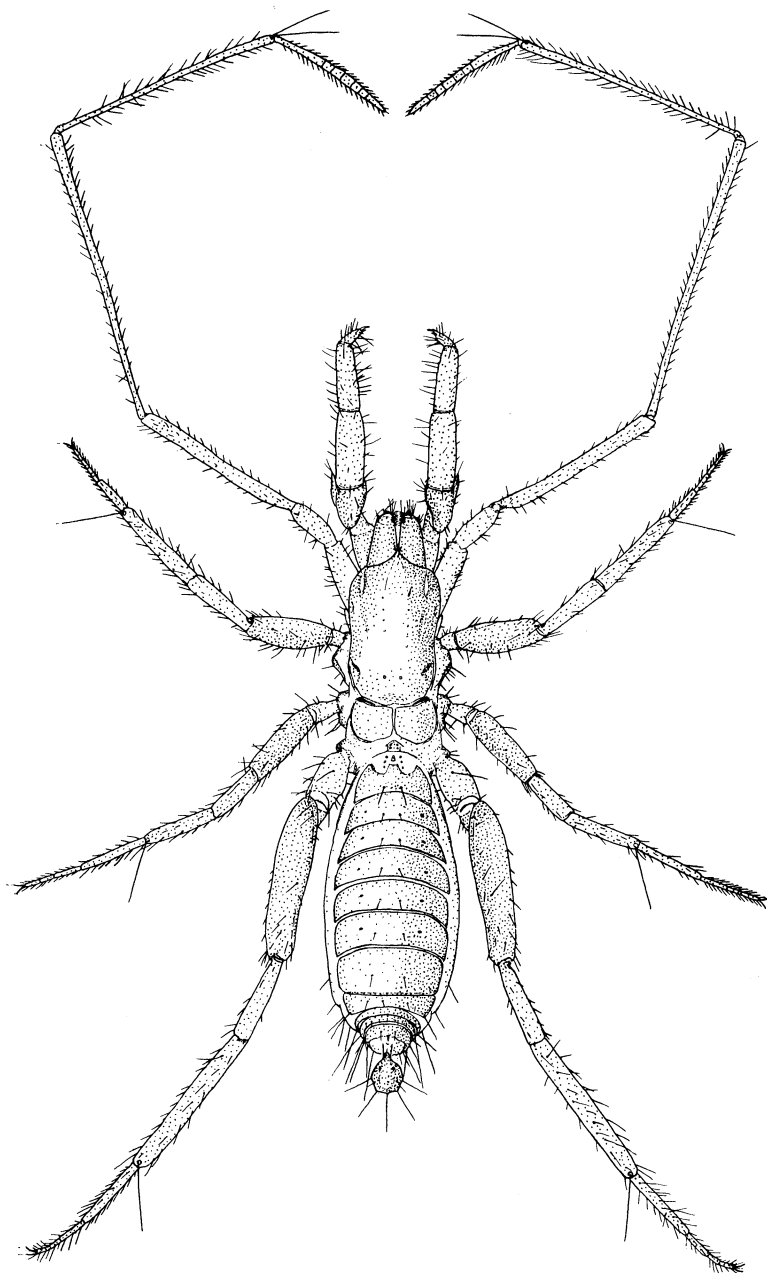
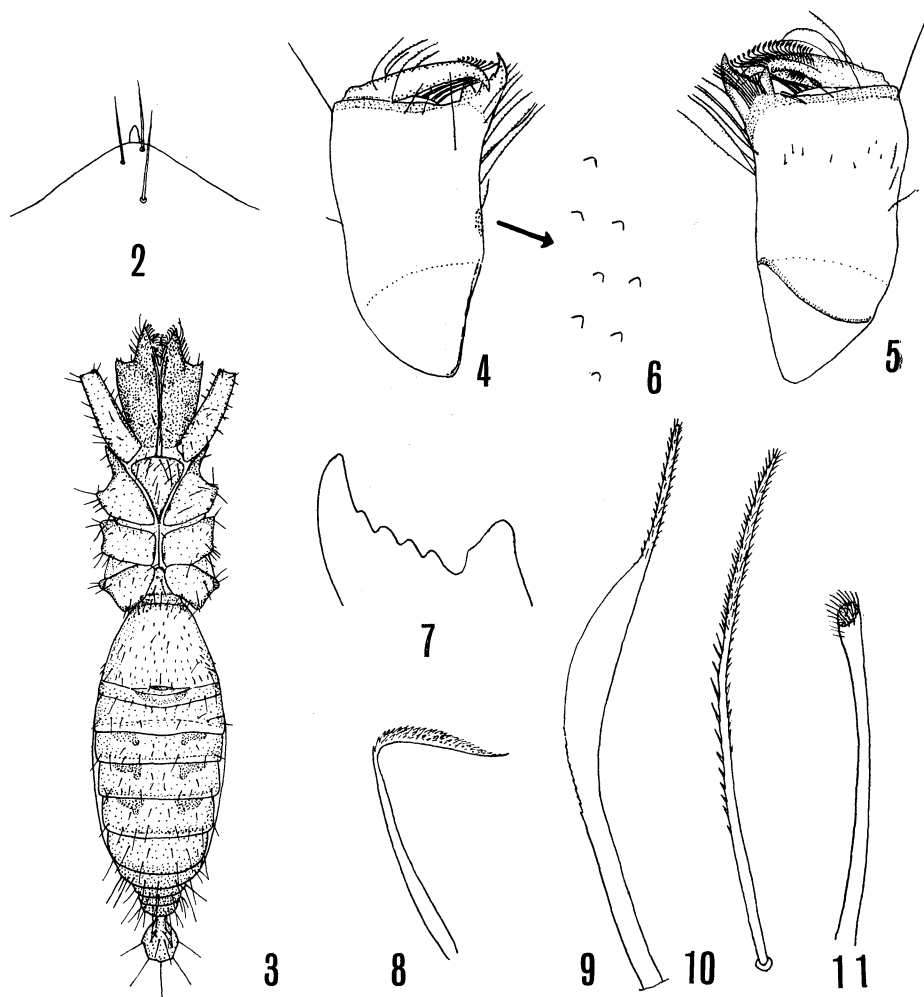


Fig. 1. *Schizomus sawadai*, male, from Chichi-jima Island, the Bonin Islands.

postero-medial margins approximately straight or slightly concave. Cephalic sternum subtriangular with a posterior sharp apex which lies between second coxae; anterior margin roundly convex and with a pair of exception-



Figs. 2-11. *Schizomus sawadai*, male. 2. Anterior margin of cephalothorax. 3. Ventral aspect, setae and appendages omitted. 4. Outer aspect of right chelicera. 5. Inner aspect of right chelicera. 6. The stridulatory area of chelicera (with some of the spicules enlarged). 7. Distal end of immovable digit of chelicera. 8 and 11. Curled and feathered setae of distal end of movable digit of chelicera. 9. Long strong modified seta (blood-hair) of distal margin of chelicera. 10. Feathered seta of chelicera.

ally long slender setae ($1\frac{1}{2}$ times as long as the sternum) at the middle, and both lateral angles rounded. First thoracic sternum is a linear strip. Second thoracic sternum trapezoid with the anterior side shorter and provided with six spines.

Chelicerae: First segment bearing three short feathered setae dorsally and eight shorter setae at distal fourth area on inner surface; there are a long seta at the apex on the dorsum, seven long feathered and two simple setae on the venter, three feathered setae on distal part of inner surface and four simple setae on distal part of outer surface, and three long strong modified setae (blood-hairs) widened and flattened medially and extending ventrally at anterior margin, and six and four long setae on inner and outer sides of distal membrane respectively; immovable digit with five small teeth between the basal and apical main teeth, bearing ten short feathered setae lined closely at the base of inner surface. Second segment or movable digit with 20 short distally feathered and curled setae; there are also 17 hyaline teeth of serrula and a guard tooth as a cleaning organ on the distal half of inner surface.

Pedipalpi: Total length, 2.75-3.45 mm. Trochanter protruded distally, a little longer than femur; ventral margin convex roundly, with strong setae, dorsal margin more or less straight; internal surface with a single short tooth at about distal fourth, and with four setae; tip of distal process blunt. Femur curved and roundly convex dorsally; margined with setae. Patella nearly of equal length to tibia but shorter than it, and with fewer setae than tibia. Tarsus shorter than tibia and with two immovable short spurs, bearing many setae, and a claw.

Legs: First leg with a long and slender patella and tibia; trochanter shorter than coxa; femur shorter and stouter than patella; tibia shorter than patella, and apex of tibia with two large sensory hair sockets, each bearing a long, fine hair (trichobothrium); combined basitarsus and tarsus shorter than femur; basitarsus shorter than tarsus which has no claw. Second coxae with an antero-distal long process. Second to fourth tibiae with each one large apical hair socket which has a long and fine hair (trichobothrium). Fourth legs stouter than the others; femur robust, with usual obtuse convex in the proximo-dorsal margin.

Measurements of each of right legs are as follows, which show the linear distance between midpoints of joints.

	Pedipalp (mm)	1st leg (mm)	2nd leg (mm)	3rd leg (mm)	4th leg (mm)
Coxa	0.80(0.72)	0.80(0.72)	0.50(0.48)	0.45(0.42)	0.40(0.35)
Trochanter	0.60(0.57)	0.60(0.45)	0.20(0.20)	0.20(0.22)	0.45(0.44)
Femur	0.50(0.43)	2.10(1.78)	0.80(0.86)	0.95(0.83)	1.55(1.47)
Patella	0.60(0.52)	2.60(2.32)	0.56(0.52)	0.50(0.41)	0.70(0.65)
Tibia	0.55(0.52)	1.90(1.68)	0.80(0.79)	0.60(0.50)	1.25(1.12)
Basitarsus	—	0.50(0.47)	0.62(0.58)	0.65(0.57)	1.00(0.87)
Tarsus	0.40(0.37)	0.70(0.63)	0.58(0.53)	0.55(0.55)	0.75(0.73)
Total	3.45(3.13)	9.20(8.04)	4.06(3.95)	3.90(3.50)	6.10(5.63)

The values before parentheses are measurements with the largest individual (no. 5 specimen). The values in parentheses are the averages of measurements with three individuals including the largest male.

Abdomen: First abdominal tergite small and triangular, with two pairs of very short spines and also with a pair of mesal setae on posterior margin. Second to ninth abdominal segments with pleural membrane; each tergite with a pair of mesal setae. Anterior side of second abdominal tergite with a pair of round depression; there are a small separated plate and three pairs of very short spines anteriorly to main plate. Tergites third to ninth simply shaped. Segments tenth to twelfth making complete ring encircling abdomen, and with short setae on dorsal surface and long setae on ventral surface; tip of the latter long setae bifurcate; dorsal half of twelfth segment with a depression in the postero-mesal margin.

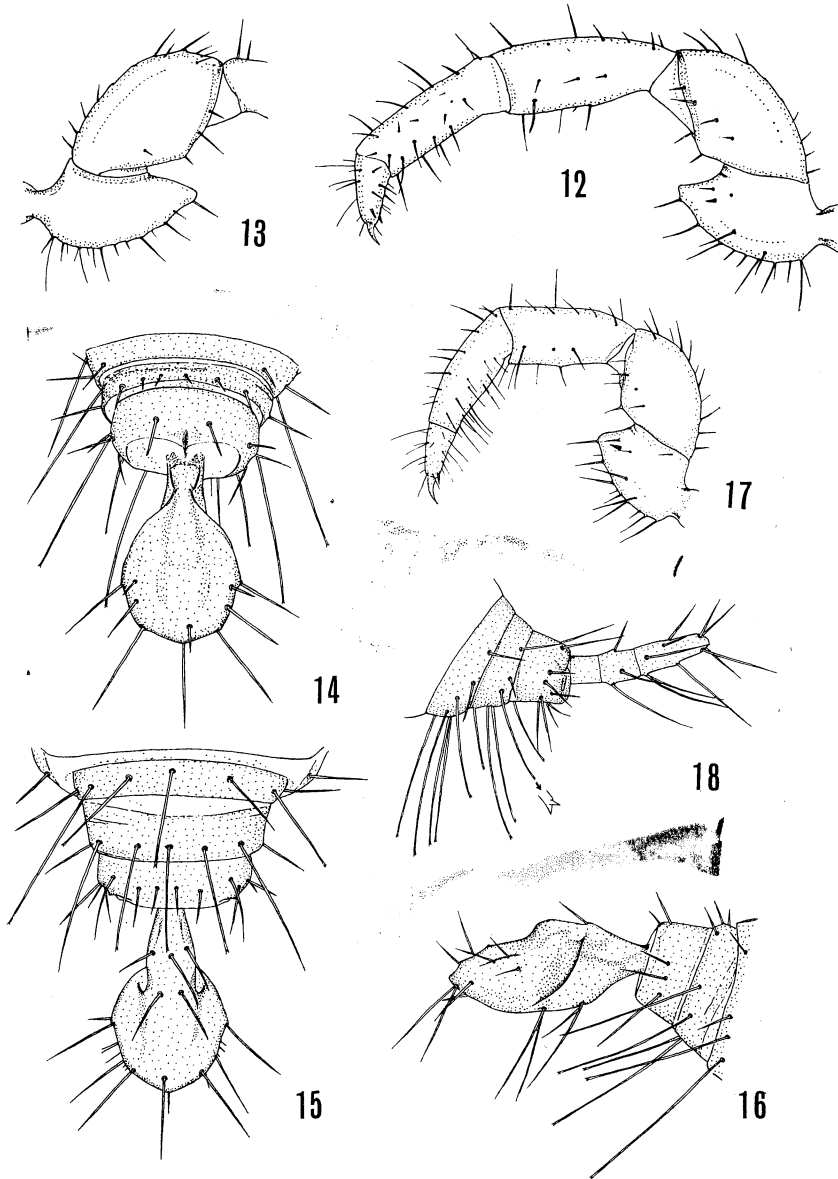
Flagellum: Suboctangular in dorsal view, undivided; posterior side constitutes four edges; in lateral view central part showing maximum height and then lowered just behind it; slightly longer than wide; length (including stalk): 0.45–0.50 mm, width: 0.30–0.35 mm, height: 0.20 mm.

Female. Body length (from apex of propeltidium to tip of flagellum), 4.63–5.00 mm. Propeltidial length, 1.20–1.27 mm.

Coloration: The same as the male.

Pedipalpi: Pedipalpi similar as those in male but shorter; tarsus with one apical spine. Measurements are shown together with those of legs.

Legs: First legs similar those as in male but shorter. Measurements of each of right legs are given as follows by the same method as in the case of male.



Figs. 12-16. *Schizomus sawadai*, male. 12. Inner aspect of pedipalp. 13. Outer aspect of trochanter-femur of pedipalp. 14-16. Dorsal, ventral, and lateral aspects of flagellum.

Figs. 17 and 18. *Schizomus sawadai*, female. 17. Inner aspect of pedipalp. 18. Lateral aspect of flagellum.

	Pedipalp (mm)	1st leg (mm)	2nd leg (mm)	3rd leg (mm)	4th leg (mm)
Coxa	0.75(0.68)	0.60(0.55)	0.44(0.42)	0.38(0.35)	0.32(0.33)
Trochanter	0.50(0.47)	0.32(0.31)	0.18(0.15)	0.18(0.17)	0.30(0.37)
Femur	0.30(0.31)	1.12(1.08)	0.86(0.80)	0.75(0.73)	1.12(1.16)
Patella	0.58(0.49)	1.38(1.33)	0.44(0.41)	0.30(0.30)	0.50(0.50)
Tibia	0.43(0.44)	1.06(1.00)	0.57(0.50)	0.38(0.38)	0.81(0.77)
Basitarsus	—	0.30(0.30)	0.43(0.42)	0.50(0.47)	0.75(0.68)
Tarsus	0.38(0.35)	0.50(0.48)	0.50(0.46)	0.50(0.47)	0.62(0.57)
Total	2.94(2.74)	5.28(5.04)	3.42(3.16)	2.99(2.87)	4.42(4.35)

The values before parentheses are measurements with the largest individual (no. 16 specimen). The values in parentheses are the averages of measurements with three individuals including the largest female.

Flagellum: Elongate, cylindrical, and divided into three sections by sutures; distal section slightly longer than two proximal sections combined; first section with no spine; second section bearing four long setae; last section bearing twelve long setae, four near base, four middle, and four near the blunt apex; length, 0.30–0.38 mm.

Materials examined. 4♂♂ 2♀♀, mountainous area (ca. 80 m alt.), upper part of Sakai-ura, Chichi-jima Is., 4. iv. 1972 (No. 5, male, and no. 16, female, in these specimen were fully examined.); 1♂ 7♀♀, Kita-fukurozawa (ca. 60 m alt.), Chichi-jima Is., 5. iv. 1972; 1♀, catchment area (ca. 80 m alt.) at the slope of Mt. Nyûtô-zan, Chichi-jima Is., 3. iv. 1972; 1♀, the side of Fukiage bridge (ca. 200 m alt.) near the mountain pass between Mt. Kasayama and Mt. Chûô-zan, Chichi-jima Is., 6. iv. 1972.

A part of material is deposited in the National Science Museum, Tokyo. Other materials are preserved in our collection.

All the materials were collected by K. SEKIGUCHI and T. YAMASAKI, and preserved in a solution of 5% in glycerine, 26% in water, and 61% in ethyl-alcohol.

Locality. Chichi-jima Island in the Bonin Islands (the Ogasawara Islands).

Notes. Recently LAWRENCE synonymized *Trithyreus* to *Schizomus* (LAWRENCE, 1969), and we follow his treatment in this paper. The present species is distinguished from all other "*Trithyreus*" forms hitherto known in the shape of flagellum of both sexes, and seems to have a relationship to "*T. luzonicus* HANSEN in HANSEN and SÖRENSEN (1905) known from Luzon of the

Philippines by the shape of flagellum.

Biological notes. The present species was found under stones in the house ruins now covered mainly by the *Leucaena glauca* (Gin-nemu, Leguminosae) bush or the *Ardisia Sieboldii* (Mokutachibana, Myrsinaceae) trees. The environments are dark even in the daytime. This whip-scorpion moves very quick and clings on the underside of stones. Some females were impregnant, and bred in laboratory for about four months being fed with *Drosophila* flies, but they laid no eggs.

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